Space Weather Forecast

Issued on Friday, 08 September 2023 at 13:04 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Moderate-class flares (R1-R2 radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate in the past 24 hours with several Common-class flares and one Moderate-class flare. There are currently six sunspot groups on the visible disc. Two of these are relatively large. The most complex one is in the northeast but remains largely inactive. The other one, in the northwest, is becoming less extensive and magnetically simpler, with most spots fading. The region responsible for the M-class flare, also in the northeast, looks rather innocuous, most of its spots remaining relatively small. However, it is developing and its magnetic configuration is becoming a little more complex. The other regions are relatively small and simple.

There have been multiple Coronal Mass Ejections (CMEs) in the past 24 hours, none of which are considered to be Earth-directed. A filament lift-off was observed shortly after 07/1900UTC, originating from the northeast simultaneously with the M2.1 flare. Another CME was observed on imagery. The source is believed to be on or slightly behind the eastern horizon and does not pose a threat to Earth. Finally, a faint partial halo was observed in the early UTC afternoon of the 07th however, given the lack of clues on satellite imagery at that time, it is believed to have originated from the far side.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of a slow regime. Solar wind speeds were mostly around 340-350km/s, briefly increasing to 380km/s for a time in the UTC evening. The number of particles the solar wind is made of were below average. The Interplanetary Magnetic Field (IMF) was weak throughout. The north-south component varied weakly. Geomagnetic activity was Quiet (Kp1-2), with only one Unsettled interval (08/0000-0300UTC).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of Moderate-class flares throughout the period, mostly from the more complex sunspot regions.

Solar Wind / Geomagnetic Activity: The CME that left the sun on the 05th may arrive at Earth late on Day 2 (09 Sep) with a chance of geomagnetic enhancements. However, it is worth noting that its analysis was contaminated by other CMEs occurring in the background, thus reducing confidence. No other Earth-directed CMEs have been observed in the last 24 hours.

With an absence of significant coronal holes on the western hemisphere, the solar wind is most likely to remain slow-ambient, with no significant or long-lasting enhancement.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Space Weather Forecast

Geomagnetic activity is expected to be mostly Quiet to Unsettled, but with a risk of becoming Active with a slight chance of isolated G1/Minor Storm intervals late om Day 2 into Day 3, under the influence of the CME that left the sun on the 05th.

Energetic Particles / Solar Radiation: Solar radiation storms are unlikely, with a very slight chance of an enhancement should any larger flares occur from the larger regions on the disc, especially later in the period.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.